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INTRODUCTION

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The plants of the California Floristic Province have been a source of interest, inspiration, and delight ever since their diversity and beauty was first realized more than two centuries ago. Here multiple authors, including many of those most versed in the taxonomic intricacies of the region's plants, present a modern, solidly-based, synthetic analysis of these plants, including for the first time both vascular plants and bryophytes, that is both a worthy contribution to our understanding and at the same time an invitation to probe ever more deeply into the virtually endless riddles that the origins and relationships of these plants present.

The analysis of this flora that Dan Axelrod and I prepared in the mid-1970's reached somewhat similar conclusions to those of the present paper, but they were far less nuanced and rigorously based than the ones presented here. Our paper included an analysis of the regional fossil record that attempted to interpret the plants of the region within the context of the history of North American floras. We traced some of the factors responsible for formation of the contemporary plant assemblages, including both massive extinction and explosive speciation in the edaphically highly varied, mostly summer-dry slopes, mountains, and plains of the California Floristic Province. It remains startling to consider the rich diversity of the ancient warm-temperate forests that once clothed these areas, with their rich representation of both Angiosperms and conifers, but were then eliminated over tens of millions of years with the spreading drought that accompanied the formation of cold offshore currents along the coast. Although our knowledge of the regional paleo-history has been amplified over the past forty years, particularly by our understanding of the geological history of the Great Basin and of the timing of the formation of the cold currents, the account we presented forty years ago stands up well in its general outlines.

Our ability to produce useful databases was limited in the 1970's by the lack of suitable computers and the associated software that so facilitate our ability not only to perform analyses in the first place, but even more importantly, to keep the results of those analyses in a form where they remain useful to serve the needs of future generations of botanists. As these botanists continue to go over the data with improved information, they will be able to use analyses like those presented here for decades and centuries to come and thus to improve them continuously. The application of DNA analysis to our understanding of the evolutionary relationships of plants and hence to improved taxonomies barely existed then, and has contributed many novel insights since that time. Largely as a consequence of the application of these methods, the number of genera recognized in the California Floristic Province for what has remained roughly the same total number of species has grown by about 50% over the past four decades. Many substantial differences both within and between groups have been detected by molecular analyses during this period, with the results of these analyses often leading to revised taxonomies.

Many of the assemblages of plants that occur within the boundaries of the California Floristic Province have been altered rapidly as a result of the assaults of invasive plants and animals over the years. Thus the golden-brown hills of California are colored largely by grasses and bur-clovers of Mediterranean origin that arrived with the first missionaries nearly 250 years ago and spread to cover most of the State. Hundreds of additional species are being added and spreading rapidly, with many more to come. The population of California itself has grown from fewer than 200,000 people when my ancestors arrived with the Donner Party 170 years ago (1846), to 6.3 million when I was born (1936), to about 22 million when Axelrod and I were writing our paper (1976), and on to 39.3 million today (well over 40 million in the California Floristic Province), with demands for ever-increased per capita consumption growing much more rapidly than the increase in numbers of people. Global climate change, a subject of debate in the 1970's, has emerged as a major factor driving extinction in California and elsewhere. The future of our climate is uncertain, but it is one that will doubtless wreak havoc on our native ecosystems (and to our economy) for decades and possibly centuries to come – depending on how vigorously we decide to respond to it.

It is for these reasons that the conservation of plants emerges as so important within the California Floristic Province generally. According to estimates presented in the following paper, some 6927 native minimum rank taxa (MRTs) occur within the California Floristic Province, with 2612 of them endemic vascular plants and 37 endemic bryophytes. A high degree of sharing across political boundaries (41% of the vascular plant MRTs and 58% of the bryophytes) into southwestern Oregon and northwestern Baja California means that regional conservation efforts, to be effective, must be concerned with the plants of whole California Floristic Province and not simply with those of the State of California. Fortunately this conclusion is being implemented both by the Center for Plant Conservation and by California Plant Rescue. We can hope that their efforts will be funded adequately to save the botanical treasures of the region for our descendants to study and to simply enjoy.